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## A Review of the Ground Spider Genus *Scotognapha* (Araneae, Gnaphosidae), and its Radiation on the Canary and Salvage Islands

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### ABSTRACT

The ground spider genus *Scotognapha* Dalmas comprises at least 13 species; these taxa appear to be endemic to the Canary and Salvage Islands, and may represent the sister group of all other gnaphosines. *Nomisia teideensis* Wunderlich is transferred to *Scotognapha*; two specific names are newly synonymized: *S. gravieri* Dalmas with *S. atomaria* Dalmas, and *S. bewickei* (Blackwall) with *S. paivai* (Blackwall). Seven new species are described: *S. juan-grandica* and *S. wunderlichi* from Grand Canary; *S. medano* from Hierro, Tenerife, and Lanzarote; *S. haria* from Lanzarote; *S. galletas* and *S. taganana* from Tenerife; and *S. costacalma* from Fuerteventura. Adult males of *S. canaricola* (Strand), and adult females of *S. convexa* (Simon), *S. atomaria* Dalmas, and *S. teideensis* (Wunderlich), are described for the first time.

### INTRODUCTION

The spider genus *Scotognapha* was established by Dalmas (1920), and was construed by him to include just three species, known only from males: the type species, originally described as *Pythonissa convexa* by Simon (1883) from the Canary Islands, plus two

newly described taxa, *S. atomaria* Dalmas and *S. gravieri* Dalmas, purportedly from the Canary Islands and Syria, respectively. Since that time, four additional species have been placed in the genus. Denis (1963) transferred to *Scotognapha* the taxa originally described as *Drassus paivani* and *Drassus bewickii* by

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Blackwall (1864) from the Salvage Islands. Schmidt (1975a) transferred to *Scotognapha* the species originally described as *Gnaphosa canaricola* by Strand (1911) from the Canary Islands, and later (Schmidt, 1980) described *S. brunnea* from Lanzarote Island in the Canaries.

Over recent decades, a fair amount of collecting for ground spiders has been done in various parts of northern Africa and the Middle East, as well as in the Canary Islands, and we have examined many collections, looking for specimens of this unusual genus. Not a single additional specimen has been found either in African or Middle Eastern samples. Careful examination of the holotype of *S. gravieri* has revealed no genitalic differences from that of *S. atomaria*. Indeed, Dalmas (1920: 122) indicated that although his two species from the Canaries had rather different male palps, "celle de Syrie est si voisine de *S. atomaria* que, si ce n'était en raison du grand éloignement de leurs habitats respectifs, j'aurais hésité à l'en séparer spécifiquement." Because the only males of this species found since Dalmas' time are from Fuerteventura in the Canaries, and because the holotype of *S. gravieri* was supposedly "récolté en Syrie par M. Ch. de la Brulerie, sans indication de localité" (Dalmas, 1920: 122), we suspect that the holotype of *S. gravieri* is merely a mislabeled specimen of *S. atomaria*, and that it did not actually originate in Syria.

All the remaining *Scotognapha* specimens we have been able to identify hail from either the Canary or Salvage Islands, and we here hypothesize that the genus is endemic to those two island groups. Study of the available material suggests that there has been a surprising island radiation within the genus, comprising at least 13 different species. In most cases, these species seem to be restricted to a single island. The only apparent exceptions are *S. atomaria*, known from two adjacent islands, Grand Canary and Fuerteventura, and the new species *S. medano*, which is apparently widespread in the Canaries, being known from Hierro, Tenerife, and Lanzarote.

The differences among these species are, as is typical for spiders, primarily in male and female genitalic characters; we have not

found any morphological characters that reliably separate juveniles of different species. Some authors (especially Schmidt, 1975a, 1975b, 1975c, 1976, 1980, 1981, 1990; Schmidt and Krause, 1996) have published records of various *Scotognapha* species, from particular islands, that are based only on juvenile specimens; those records are all regarded here as unreliable, and our conclusions are based only on adult material. It is of course likely that molecular characters exist that could be used to separate juvenile as well as adult specimens, and we hope that our results will stimulate future investigations, including molecular ones, of this remarkable radiation of spiders.

From the relatively sparse records presented below, it is clear that much collecting for *Scotognapha* still needs to be done on these islands, for mature specimens are not plentiful. These are not tiny spiders, and even cryptic species of their size are seldom overlooked by collectors. *Scotognapha* specimens are muddy yellow to brown in life; like similar-sized gnaphosids such as members of the genus *Drassodes* Westring (which abound in collections from the Canaries), they are usually found under stones. *Drassodes* specimens are often found in silken cells under stones (or, indeed, under any suitable discarded rubbish), on almost any substrate that is not too wet. Although *Drassodes* specimens can move very quickly (for short distances), their silken cells can hinder their escape and make capture relatively easy.

*Scotognapha* specimens, on the other hand, appear to have a preference for stones embedded in sandy soil bearing grass and low vegetation, or even stones on small pockets of sand on bare, stony ground. Near the end of a recent trip to La Gomera, it was observed that if not immediately captured, a *Scotognapha* specimen may not run, but can instead disappear very quickly by wriggling under the sand. No retreats have been observed, so the burying process is unhindered by silk. Consequently, collectors might do well to check the sand under stones in the right habitat, even when no spider is visible! Specimens of *Scotognapha* seem to mature earlier in the year near sea level (March–April) than in the mountains (July–Septem-

ber); adults have been taken at altitudes as high as 2000 m.

## RELATIONSHIPS

The relationships of *Scotognapha* have not previously been the subject of much discussion. In his original description, Dalmas (1920: 119) suggested that the genus "établit le passage entre le groupe des Gnaphoseae et celui des Echemeae," which today constitute separate subfamilies. The Gnaphosinae are united by the presence of a serrated keel on the cheliceral retromargin (Platnick and Shadab, 1975: fig. 3). Specimens of *Scotognapha* do have such a keel (fig. 2), although it is much shorter than in typical gnaphosines, and is accompanied anteriorly by an intermediately positioned tooth that is not found in other gnaphosines. Dalmas (1921) recognized two groups of gnaphosines, one including only the type genus *Gnaphosa* Latreille, and one including *Pterotricha* Kulczynski and related genera. Although Dalmas specifically excluded *Scotognapha* from the latter group, and continued to view the genus as being in some sense intermediate between gnaphosines and echemines (Dalmas, 1921: 326), Roewer (1955) included *Scotognapha* within the Gnaphosinae.

It is possible that the cheliceral armature of *Scotognapha* represents the plesiomorphic condition for gnaphosines (i.e., that initially the retromarginal serrated keel was relatively low, and was accompanied by one or more normal teeth). If so, then *Scotognapha* could represent the sister group of all other gnaphosines, which would be united by both the loss of the intermediate teeth and the enlargement of the retromarginal keel. Alternatively, of course, both the intermediate teeth and the low keel could be autapomorphic for *Scotognapha*, in which case those cheliceral characters would be uninformative about the position of the genus within the subfamily. Because we know of no characters suggesting a particularly close relationship between *Scotognapha* and any other gnaphosine genus or group of genera, we suspect that the first hypothesis is more likely to be correct.

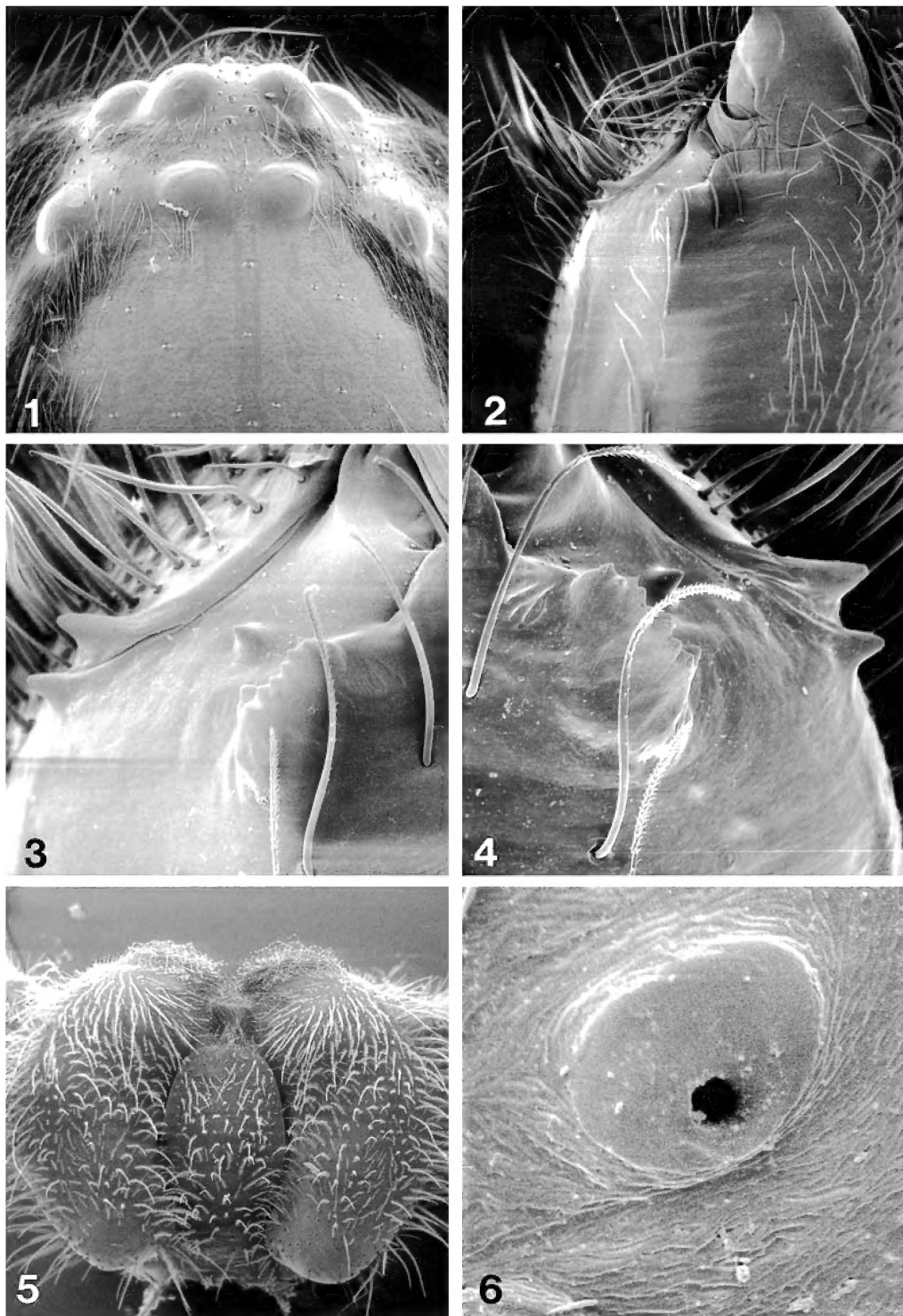
Although we do not have enough characters to support a fully resolved cladogram of *Scotognapha* species, we can defend some

hypotheses about their interrelationships. Eleven of the 13 species are now known from males, and those species seem to fall into three groups. In the *convexa* group, including *S. convexa*, *S. juangrandica*, new species, *S. atomaria*, and *S. medano*, the male embolus is relatively long and narrow (figs. 19, 23, 27, 31). In the *canaricola* group, including *S. canaricola*, *S. haria*, new species, *S. brunnea*, and *S. wunderlichi*, new species, the male embolus is instead greatly widened, especially at its base (figs. 35, 39, 43, 47). In the *teideensis* group, including *S. teideensis* (Wunderlich), *S. galletas*, new species, and *S. taganana*, new species, the male embolus is subdistally bifid (figs. 51, 57, 61). Two additional species are known only from females; one of those is *S. paivai*, the only species known from the Salvage Islands. It is probably a member of the *canaricola* group, sharing with *S. canaricola*, for example, a relatively long and narrow epigynal atrium (figs. 37, 65) and obliquely directed spermathecal duct heads (figs. 38, 66). In contrast, *S. costacalma*, new species, is probably a member of the *teideensis* group, sharing with *S. taganana*, for example, a short and anteriorly narrowed epigynal septum (figs. 63, 67).

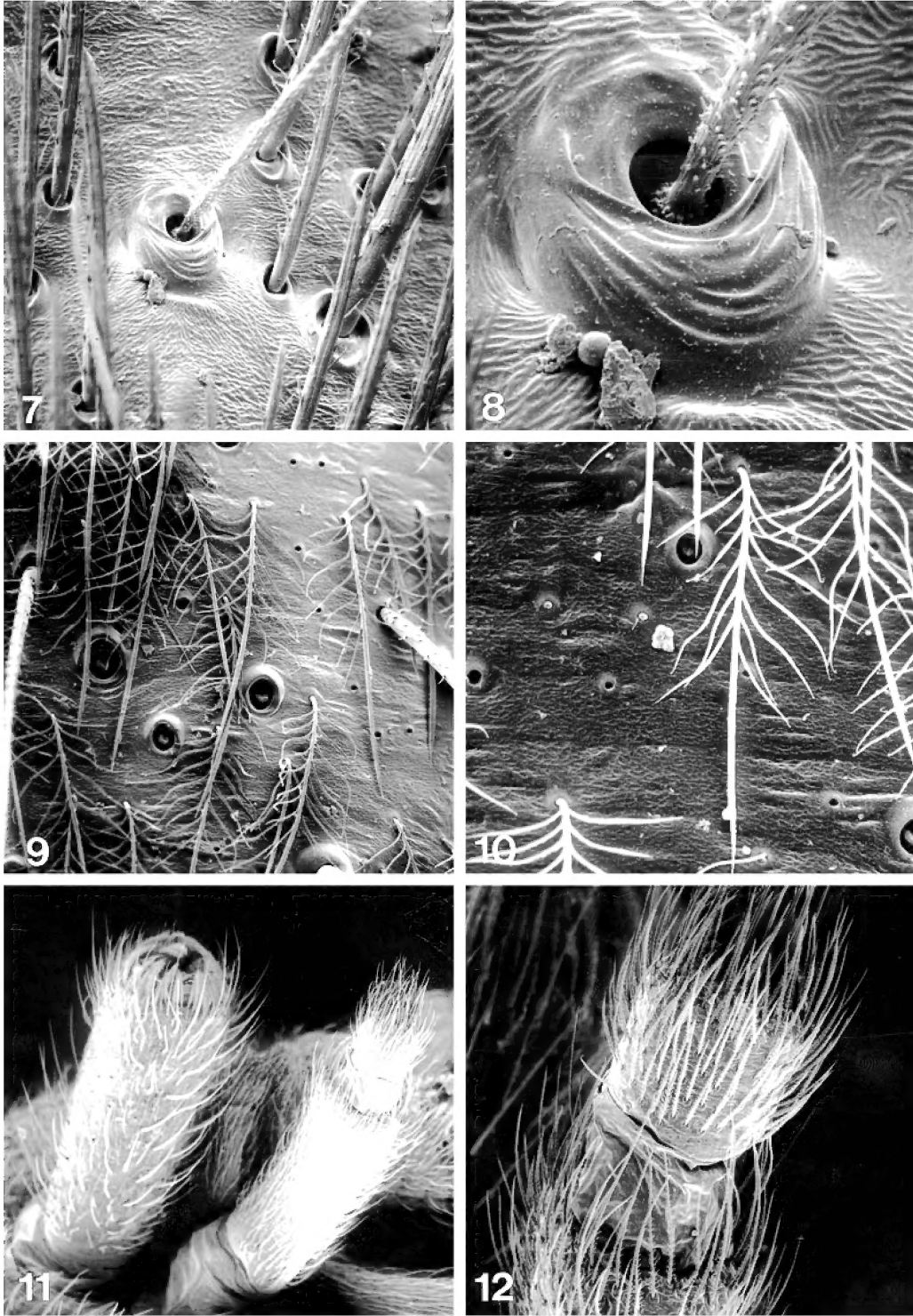
The *convexa* group has a relatively broad distribution, as one of its members (*S. medano*) is apparently widely distributed in the Canaries (with records even from the two most widely separated islands in that group, Hierro and Lanzarote). The other three species in the *convexa* group all occur on Grand Canary (with one, *S. atomaria*, apparently occurring on Fuerteventura as well), suggesting that focused collecting efforts could reveal additional species on Grand Canary.

The *canaricola* group includes one species from Gomera (*S. canaricola*), two from Lanzarote (*S. haria* and *S. brunnea*), and one from Grand Canary (*S. wunderlichi*), plus one presumptive member (*S. paivai*) from Great Salvage.

Three species of the *teideensis* group are seemingly restricted to Tenerife; as with the *convexa* group on Grand Canary, there thus appear to be opportunities on Tenerife for speciation studies of considerable interest. A fourth and presumptive member of the group occurs on Fuerteventura.



Figs. 1–6. *Scotognapha teideensis* (Wunderlich). 1. Carapace, dorsal view. 2, 3, 4. Chelicerae, posterior view. 5. Endites, ventral view. 6. Tarsal organ from leg I, dorsal view.



Figs. 7–12. *Scotognapha teideensis* (Wunderlich). 7, 8. Tarsus of leg I, trichobothrial base, dorsal view. 9, 10. Metatarsus of leg I, plumose setae, dorsal view. 11. Spinnerets, lateral view. 12. Posterior lateral spinneret, apical segment, lateral view.



In summary, several islands are already known to host more than one species. Grand Canary and Tenerife each have at least four species, and in both cases three of those four species appear to be single-island endemics. Lanzarote has at least three species, two of which appear to be single-island endemics. Fuerteventura has at least two species, including one that is apparently endemic.

Recent studies on the spider genus *Dysdera* Latreille, which is highly speciose in the Canaries (e.g., Arnedo et al., 1996, 2000), have also not yet resulted in a well-resolved cladogram. However the separation of eastern and western island lineages noted by those authors in *Dysdera* does not seem to hold also for the members of *Scotognapha*, if our tentative species groupings prove to be monophyletic.

#### COLLECTIONS EXAMINED AND ABBREVIATIONS

AMNH	American Museum of Natural History, New York
CJW	J. Wunderlich, Straubenhardt, Germany
CKT	K. Thaler, Innsbruck, Austria
CPO	P. Oromí, Universidad de La Laguna, Tenerife
DMG	Museum für Tierkunde, Dresden, K. Schniebs
HDO	Hope Entomological Collections, Oxford University, M. Atkinson
JAM	J. Murphy
MNHN	Muséum National d'Histoire Naturelle, Paris, C. Rollard
NMS	Natur-Museum Senckenberg, Frankfurt, M. Grasshoff
ZMH	Zoological Museum, Hamburg, H. Dastych

The format of the descriptions and standard abbreviations of morphological terms follow those of Platnick and Shadab (1975) and Platnick (1990). All measurements are in millimeters.

#### SCOTOGNAPHA DALMAS

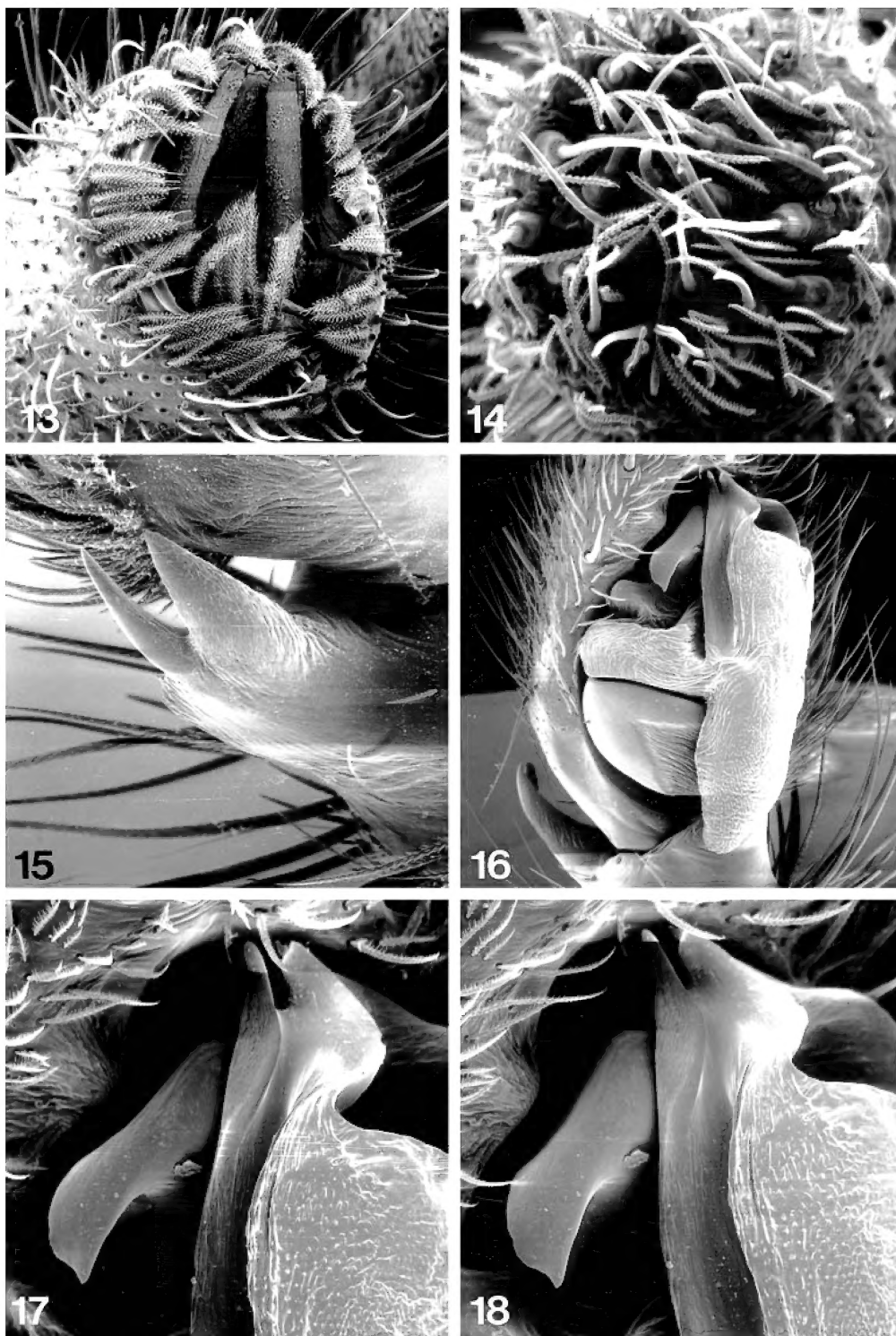
*Scotognapha* Dalmás, 1920: 119 (type species by original designation *Pythonissa convexa* Simon).

**DIAGNOSIS:** Specimens of *Scotognapha* can be separated from other gnaphosids by the combined presence of a low, narrow, serrated

keel on the cheliceral retromargin and a normal cheliceral tooth situated between the keel and the promarginal tooth row (figs. 2–4). The peculiar shape of the male palpal tegulum, which is extended posteriorly into a distinct prolateral lobe (as in figs. 19, 23, 27, 47) provides an excellent putative synapomorphy for the genus and is here predicted to occur in the as yet unknown males of *S. paivai* and *S. costacalma*.

**DESCRIPTION:** Total length 5.40–14.05. Carapace oval in dorsal view, widest between coxae II and III, smoothly narrowed opposite palpi, light to dark brown, without darkened lateral margins; cephalic area slightly elevated; thoracic groove long, well-developed, longitudinal. From above, anterior eye row procurved, posterior row slightly recurved; from front, both rows slightly procurved. AME circular, dark; PME irregularly rectangular, light; other eyes oval, light; eyes almost subequal; AME separated by slightly less than their diameter, subcontiguous with ALE; PME usually separated by less than their diameter, by more than their diameter from PLE; lateral eyes of each side separated by more than their diameter; MOQ longer than wide, slightly wider in front than in back (fig. 1). Clypeal height more than twice AME diameter. Chelicerae with short, narrow, slightly serrated retromarginal keel, situated terminally, two or three promarginal teeth, and one intermediately situated tooth (figs. 2–4); retromarginal keel often appearing small, toothlike under light microscopy. Mouthparts and sternum dirty yellow to light brown; endites short, 1.5–2.0 times longer than wide, rounded, with oblique depression and weak distal scopula (fig. 5); labium twice as long as wide at middle (fig. 5); sternum oval, broad medially, with long setae at margins, short dark setae covering entire surface, rebordered, with short extensions to and between coxae.

Leg formula 4123. Typical leg spination pattern (only surfaces bearing spines listed): femora: I d1-1-0, p0-0-1; II d1-1-0, p0-0-1; III d1-0-1, p0-1-1, r0-1-1; IV d1-1-0, p0-0-1, r0-0-1; patellae: III p1-0-0, r0-1-0; IV r0-1-0; tibiae: III d2-0-1, p2-1-1, v2-2-2, r2-1-1; IV d1-0-0, p1-1-1, v2-2-2, r2-1-1; metatarsi: I v1-2-0; II v2-2-2; III d1-2-2, p1-1-1, v2-2-2, r1-1-1; IV d1-2-2, p1-1-1, v2-2-2, r1-



Figs. 13–18. *Scotognapha teideensis* (Wunderlich). **13.** Anterior lateral spinneret, apical view. **14.** Posterior lateral spinneret, apical view. **15.** Retrolateral apophysis of male palpal tibia, retrolateral view. **16.** Right male palp, ventral view. **17, 18.** Right male palp, ventral and apical views.

1-1. Legs yellow-brown or light brown; tarsi lightly scopulate, with two dentate claws and claw tufts; trochanters not notched; metatarsal preening comb lacking; tibiae I, II of females ventrally without spines, of males with three pairs of spines; tarsi with two rows, metatarsi with single row of trichobothria, trichobothrial bases elevated, bearing 6-8 short, narrow ridges (figs. 7, 8); tarsal organ elevated, circular, smooth, with oval distal opening (fig. 6). Abdomen usually dirty yellow to brown with conspicuous anterior tuft of hairs, dorsum of some species with chevron pattern anteriorly, dark dots and stripes posteriorly; venter same color or lighter, with two closely spaced longitudinal rows of dark spots, few dark spots on sides; males with small anterior scutum. Carapace, abdomen, and legs covered by distally squamose, plumose setae bearing proximally 6-7 pairs of appendages originating from lateral surface (figs. 9, 10). Six spinnerets, anterior laterals large, cylindrical, separated by slightly more than their diameter, with two major ampullate gland spigots and five piriform gland spigots (fig. 13), posterior medians smallest, apically with minor ampullate and aciniform gland spigots, females with two posterior rows of cylindrical gland spigots; posterior laterals narrow, long, longer than ALS, with apical segment bearing aciniform gland spigots (fig. 14); posterior laterals typically strongly retracted into abdomen for 2/3 of their length, hence often appearing very short, even shorter than anterior laterals.

Male palp with prolateral portion of tegulum enormously extended posteriorly (figs. 16, 19, 23, 27, 31, 35, 39, 47); embolus fused with conductor, medially or prolaterally situated, directed anteriorly (figs. 17, 43, 51, 57, 61) or retrolaterally (figs. 19, 23, 27, 31, 35, 39, 47); median apophysis hooked; variously shaped terminal apophysis situated dorsally of embolus (figs. 19, 24, 28, 31, 47). Retrolateral tibial apophysis usually more or less conical, slightly curved at tip (figs. 20, 24, 28) or bifurcate (*S. teideensis* only, figs. 15, 52-54). Epigynum with deep, rounded or elongated atrium, wide anteriorly and narrow to very narrow posteriorly, bearing wide anterior hood and raised median septum; copulatory openings situated medially (figs. 21, 25, 29, 33, 37, 41, 45, 49, 55, 59, 63, 65,

67); spermathecal ducts wide, short, with distinctive heads situated anteriorly, spermathecae consisting of posterior pair of large, globular or oval, widely separated receptacles (figs. 22, 26, 30, 34, 38, 42, 46, 50, 56, 60, 64, 66, 68).

*Scotognapha convexa* (Simon)

Figures 19-22

*Pythonissa convexa* Simon, 1883: 291 (male from Canary Islands, in MNHN, examined; see Note below).

*Callilepis convexa*: Simon, 1893: 382.

*Scotognapha convexa*: Dalmas, 1920: 120.

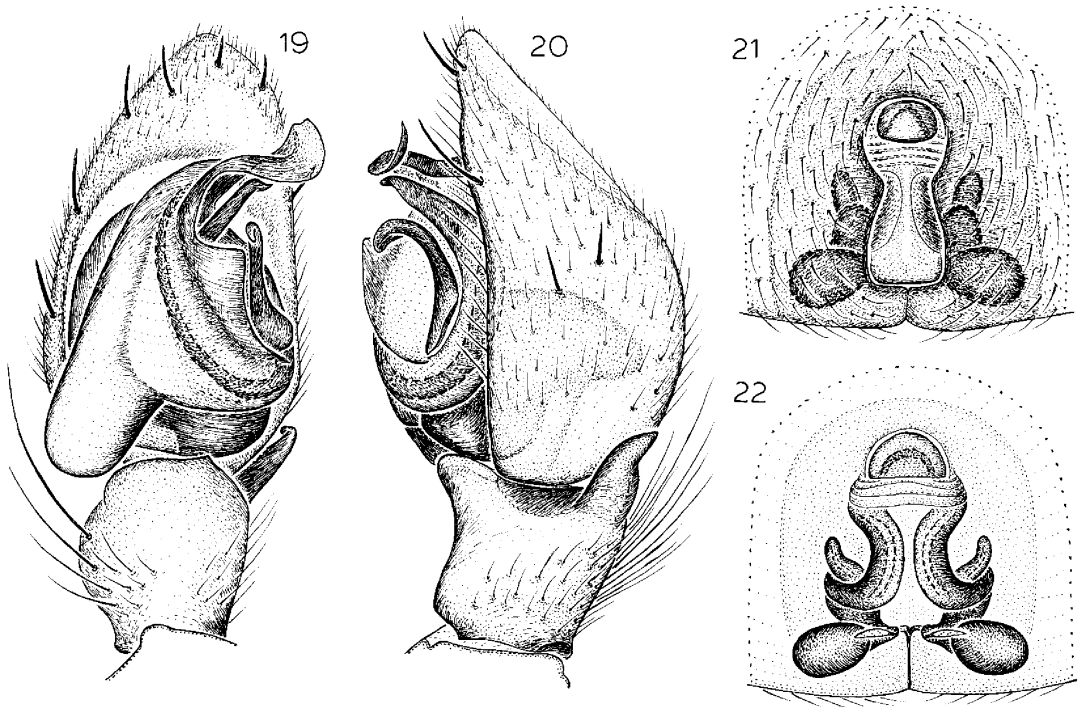
NOTE: Simon (1883) described *Pythonissa convexa* on the basis of a single female, in poor condition, collected by Verneau in the Canary Islands; no specific locality was mentioned, and there is no definitive indication in the original description as to whether the specimen was adult. In a later listing of specimens collected by Verneau in 1888, Simon (1889) recorded the species from named sites on three different islands (Grand Canary, Fuerteventura, and Lanzarote); again, however, no indication of the sex or maturity of any of those specimens was provided. When Dalmas (1920) first restudied the material in the Simon collection, he found one adult male and two juvenile females, and indicated that one of the juvenile females was actually the type specimen. He described the adult male, and it has seemed best to follow his decision and accept the choice of this adult male as representing Simon's species. Unfortunately, there is no indication of an exact island of origin for that male, either. However, the only modern specimens matching that male are from Grand Canary, and we therefore assume that Grand Canary is the source, and type locality, of Simon's species.

DIAGNOSIS: Males can easily be recognized by the long embolus bearing a wide, strongly curved tip (fig. 19) and the long, narrow terminal and median apophyses (fig. 20), females by the elongated, anteriorly narrowed epigynal atrium (fig. 21), as well as the short, wide heads of the anterolaterally directed spermathecal ducts (fig. 22).

MALE: Described by Dalmas (1920).

FEMALE: Total length 7.80. Carapace 3.71 long, 2.67 wide. Femur II 2.02 long. Eye siz-





Figs. 19–22. *Scotognapha convexa* (Simon). **19.** Left male palp, ventral view. **20.** Same, retrolateral view. **21.** Epigynum, ventral view. **22.** Same, dorsal view.

es and interdistances: AME 0.17, ALE 0.17, PME 0.15, PLE 0.17; AME-AME 0.13, AME-ALE 0.04, PME-PME 0.06, PME-PLE 0.22, ALE-PLE 0.20; MOQ length 0.46, front width 0.43, back width 0.37. Leg spination: femur III d1-1-1; tibiae: II v0-0-1; III d1-0-1, p2-2-1, r1-1-1; IV r1-2-1; metatarsus I v2-2-0. Epigynal atrium elongated, narrowed anteriorly, with wide hood (fig. 21); heads of spermathecal ducts short, wide, directed anterolaterally, receptacles situated laterally (fig. 22).

**MATERIAL EXAMINED:** CANARY ISLANDS: no specific locality (Verneau, MNHN), 1♂, 2 juveniles. **Grand Canary:** Llanos de la Gorra, Mar. 23, 1997, under stones, elev. 100 m (J. Murphy, AMNH, JAM), 2♂, 1♀.

**DISTRIBUTION:** Known only from Grand Canary. Records from Graciosa by Dalmas (1920), and from Lanzarote and Graciosa by Schmidt (1990), were based only on juveniles and are here rejected. The adult female recorded as this species by Schmidt (1990) from El Medano on Tenerife presumably be-

longs to *S. medano* instead, whereas the adult female similarly recorded from Gomera presumably belongs to *S. canaricola*. The male recorded as this species by Schmidt and Krause (1996) from Fuerteventura belongs to *S. atomaria*.

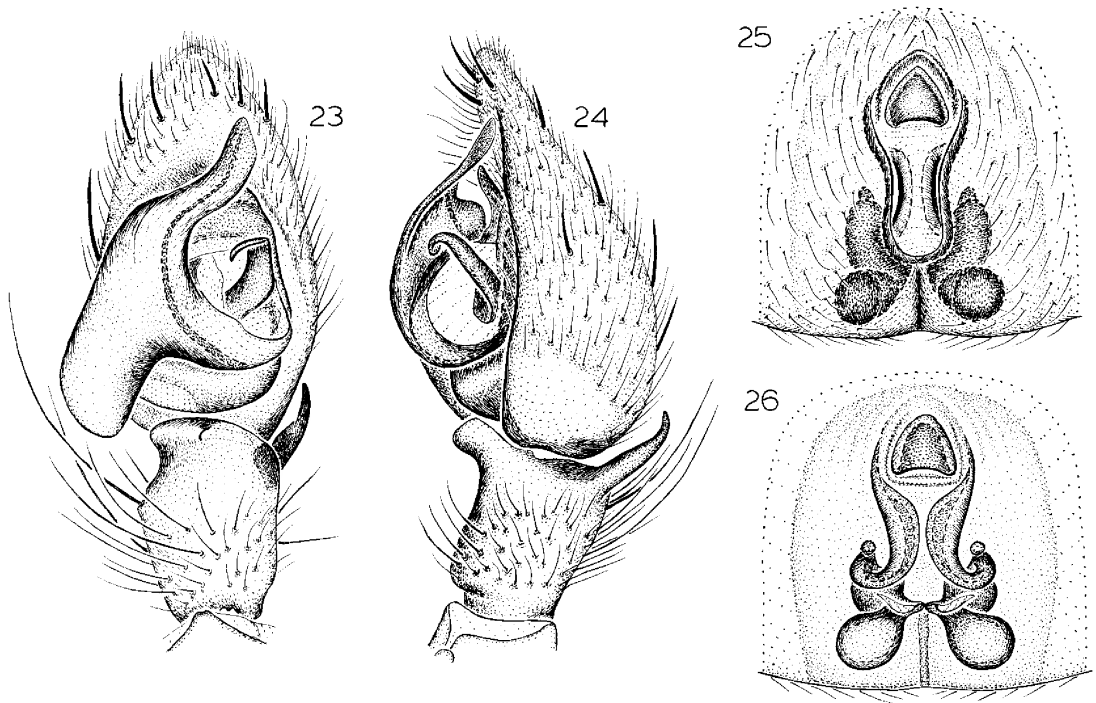
#### *Scotognapha juangrandica*, new species

Figures 23–26

**TYPES:** Male holotype and female allotype from a stony area near the sea at Juan Grande, Grand Canary, Canary Islands (Mar. 27, 1997; J. Murphy), deposited in AMNH.

**ETYMOLOGY:** The specific name refers to the type locality.

**DIAGNOSIS:** This species seems closest to *S. convexa*, but can be separated in males by the wide, flat, apically untwisted embolus and wide median and terminal apophyses (figs. 23, 24), in females by the elongated and medially narrowed epigynal atrium (fig. 25), the narrow, anteriorly directed heads of the spermathecal ducts (fig. 26), and the posteriorly situated receptacles.



Figs. 23–26. *Scotognapha juangrandica*, new species. **23.** Left male palp, ventral view. **24.** Same, retrolateral view. **25.** Epigynum, ventral view. **26.** Same, dorsal view.

**MALE:** Total length 7.54. Carapace 3.90 long, 2.73 wide. Femur II 2.84 long. Eye sizes and interdistances: AME 0.15, ALE 0.14, PME 0.20, PLE 0.15; AME-AME 0.12, AME-ALE 0.02, PME-PME 0.07, PME-PLE 0.18, ALE-PLE 0.19; MOQ length 0.47, front width 0.35, back width 0.37. Leg spination: femora: I d1-1-1, r0-1-1; II d1-1-1, p0-1-1; III d1-1-1; IV d1-1-1, p0-1-1, r0-1-1; patella IV p0-1-0; tibiae: I p1-1-2, v2-2-2, r1-0-1; II p1-1-1, v2-2-2, r1-0-0; III r1-1-1; IV d1-0-1; metatarsi: I p1-1-2, v2-2-2, r1-1-1; II d0-1-1, p1-1-1, r0-1-1; IV d2-2-2. Palp with wide, anteriorly flattened embolus, wide, short terminal apophysis, strongly curved, short, distally oval median apophysis (fig. 23); retrolateral tibial apophysis long, narrow, tip slightly bent anteriorly (fig. 24).

**FEMALE:** Total length 8.71. Carapace 3.91 long, 3.25 wide. Femur II 2.34 long. Eye sizes and interdistances: AME 0.16, ALE 0.18, PME 0.18, PLE 0.19; AME-AME 0.17, AME-ALE 0.04, PME-PME 0.08, PME-PLE 0.24, ALE-PLE 0.25; MOQ length 0.52, front width 0.49, back width 0.45. Leg spination: femur III d1-1-1; tibiae: II v0-0-1; IV

p2-1-1; metatarsi: I v2-2-0; III d1-2-2. Epigynal atrium elongated, anteriorly deep, posteriorly shallow, narrowed medially, epigynal hood narrow (fig. 25), heads of spermathecal ducts narrowing to tip, directed anteriorly (fig. 26), receptacles situated posteriorly.

**OTHER MATERIAL EXAMINED:** CANARY ISLANDS: **Grand Canary:** Juan Grande, Mar. 27, 1997, stony area near sea (J. Murphy, JAM), 1 ♀; Sonnenland, Mar. 16, 1997, dry stony area, elev. 20 m (J. Murphy, JAM), 1 ♂.

**DISTRIBUTION:** Known only from Grand Canary.

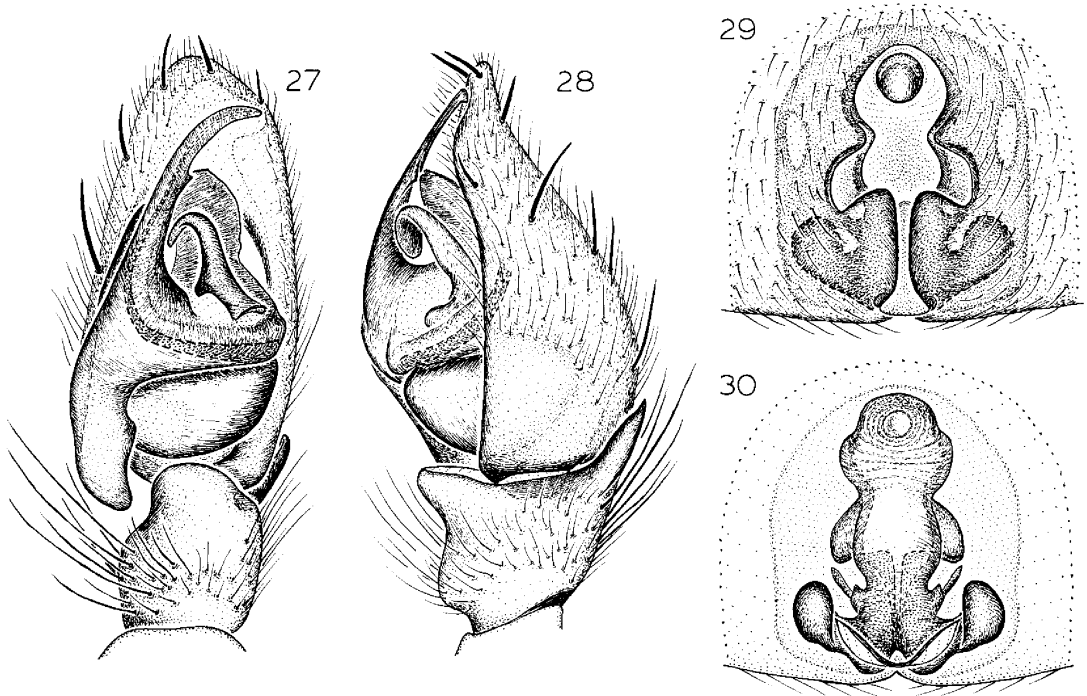
### *Scotognapha atomaria* Dalmas

Figures 27–30

*Scotognapha atomaria* Dalmas, 1920: 121 (adult male, juvenile male and juvenile female syntypes from Grand Canary, Canary Islands, in MNHN, examined).

*Scotognapha gravieri* Dalmas, 1920: 121 (male holotype from “Syria”, probably mislabeled, in MNHN, examined). **NEW SYNONYMY.**

*Scotognapha convexa* (misidentified): Schmidt



Figs. 27–30. *Scotognapha atomaria* Dalmás. 27. Left male palp, ventral view. 28. Same, retrolateral view. 29. Epigynum, ventral view. 30. Same, dorsal view.

and Krause, 1996: 266 (male from National Park El Jable, Fuerteventura).

**DIAGNOSIS:** Males can easily be recognized by the very long, narrow, apically arched embolus (which bears a small process medially), the large, spoon-shaped, and apically oval terminal apophysis and long, narrow median apophysis, and the long, anteriorly narrowed and apically slightly curved retrolateral tibial apophysis (figs. 27, 28), females by the wide, deep anterior portion and extremely narrow, shallow posterior portion of the epigynal atrium (fig. 29), as well as the slender heads of the spermathecal ducts (fig. 30).

**NOTE:** One of the males collected on Fuerteventura shows some variation in palpal structure: the embolus is slightly wider and more strongly bent anteriorly, and bears a larger medial process. Much larger samples would be needed to corroborate these slight differences as species-specific rather than individual variation.

**MALE:** Described by Dalmás (1920).

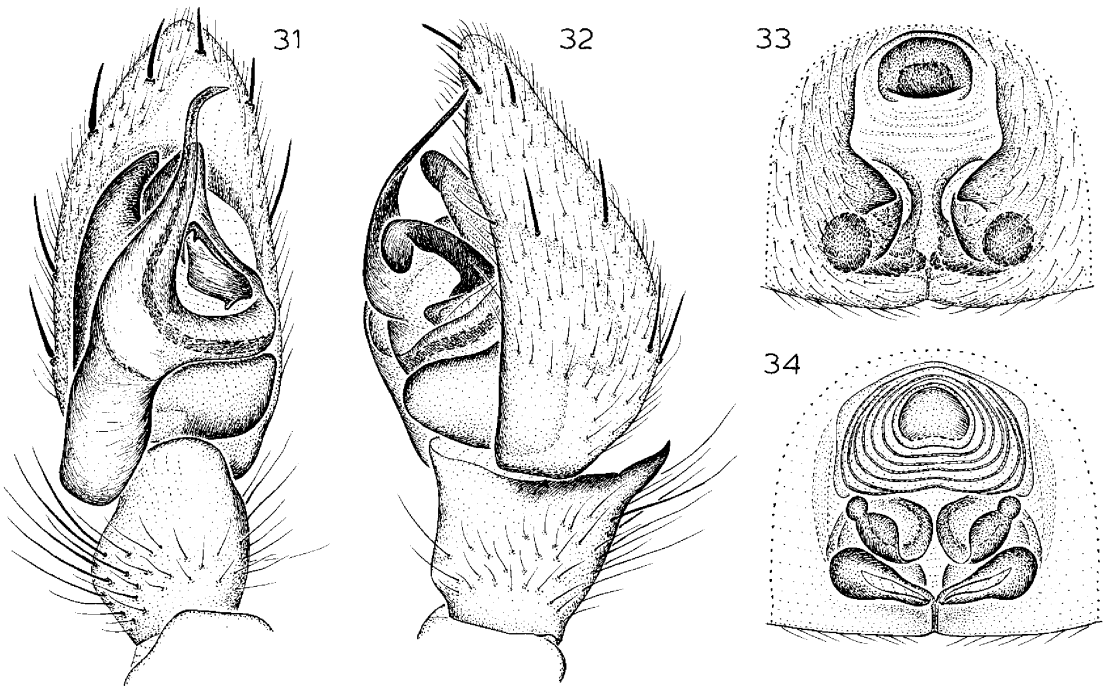
**FEMALE:** Total length 10.50. Carapace 4.25 long, 3.00 wide. Femur II 2.31 long. Eye siz-

es and interdistances: AME 0.14, ALE 0.17, PME 0.14, PLE 0.12; AME-AME 0.12, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.24, ALE-PLE 0.18; MOQ length 0.42, front width 0.36, back width 0.34. Leg spination: femora: III d1-1-2; IV d1-1-1, p0-1-1; patellae: III p1-1-0, r1-1-0; IV p1-0-0; tibiae: III d2-0-2; IV d1-1-0, p2-1-2; metatarsi: I v2-0-0; II v2-2-1. Epigynal atrium anteriorly wide, deep, extremely narrow, shallow posteriorly (fig. 29), heads of spermathecal ducts short, slender, directed anterolaterally (fig. 30).

**MATERIAL EXAMINED:** CANARY ISLANDS: **Fuerteventura:** Corralejo, National Park El Jable, Dec. 1992 (G. Schmidt, DMG), 1♂; Jandia, May 1988 (J. Wunderlich, AMNH), 1♂, 1♀. **Grand Canary:** (C. Alluaud, MNHN), 1♂, 1 juvenile ♂, 1 juvenile ♀ (syntypes). “**Syria**” (probably mislabeled): (Brulerie, MNHN), 1♂ (holotype).

**DISTRIBUTION:** Known only from Fuerteventura and Grand Canary. The female described by Schmidt (1976) from Costa Calma, Fuerteventura, belongs to *S. costacalma*.

**SYNONYMY:** No genitalic differences were



Figs. 31–34. *Scotognapha medano*, new species. **31.** Left male palp, ventral view. **32.** Same, retrolateral view. **33.** Epigynum, ventral view. **34.** Same, dorsal view.

detected between the male types of *Dalmas'* two species.

***Scotognapha medano*, new species**

Figures 31–34

*Scotognapha convexa* (misidentified): Schmidt, 1990: 11 (female from El Medano, Tenerife).

**TYPES:** Male holotype and female allotype from a stony and sandy area by the sea at El Medano, Tenerife, Canary Islands (Mar. 15, 1996; J. Murphy), deposited in AMNH.

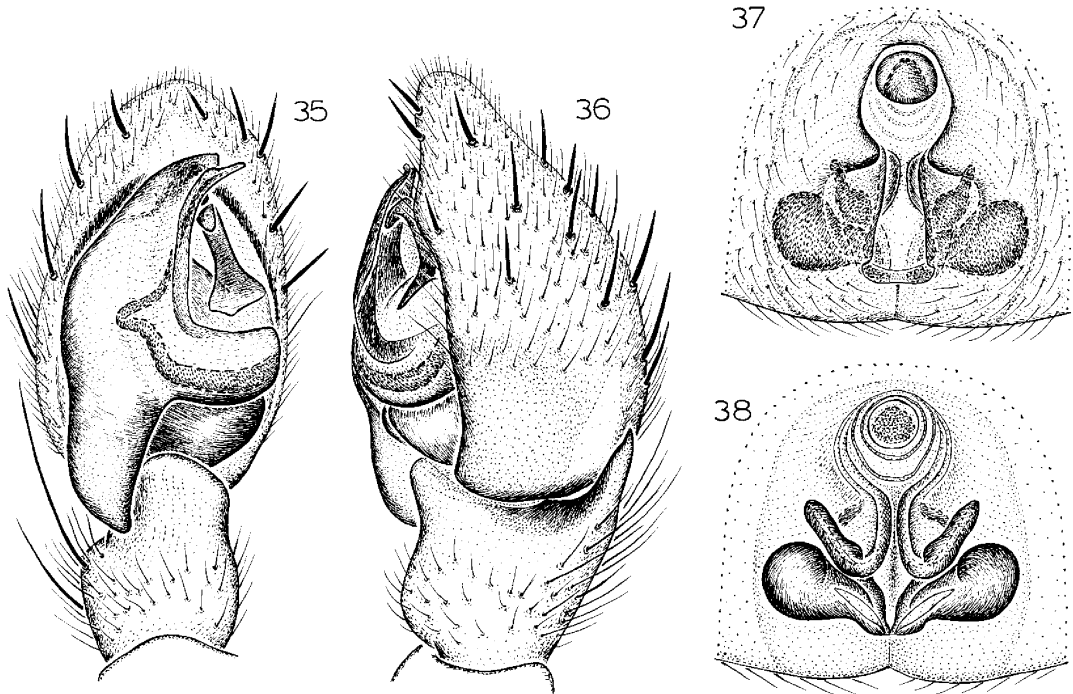
**ETYMOLOGY:** The specific name is a noun in apposition taken from the type locality.

**DIAGNOSIS:** This species seems closest to *S. atomaria*, but can be separated in males by the narrow, anteriorly slightly widened, and apically bent embolus, which lacks a medial process, the small, spoon-shaped terminal apophysis, the short, narrow median apophysis, and the short, spiniform retrolateral tibial apophysis (figs. 31, 32), in females by the extremely wide epigynal atrium, slightly narrowed posteriorly, the wide epigynal hood (fig. 33) and the wide, thick heads of the spermathecal ducts (fig. 34).

**MALE:** Total length 6.85. Carapace 3.25

long, 2.51 wide. Femur II 2.31 long. Eye sizes and interdistances: AME 0.11, ALE 0.14, PME 0.10, PLE 0.12; AME-AME 0.07, AME-ALE 0.03, PME-PME 0.03, PME-PLE 0.10, ALE-PLE 0.15; MOQ length 0.34, front width 0.24, back width 0.25. Leg spination: femora: I d1-1-1, r0-0-1; II d1-1-1, p0-1-1, r0-0-1; III d1-1-1; IV d1-1-1, p0-1-1, r0-1-1; patellae: III p1-1-0, r1-1-0; IV p0-1-0; tibiae: I p0-1-1, v2-2-2; II p1-1-1, v2-2-2; III d2-0-2; IV d1-0-1, p2-1-1; metatarsi: I p0-1-0, v2-2-2; II p1-1-1; III d0-0-0, p2-2-2, r2-2-2; IV d0-0-0, p2-2-2, r2-2-2. Palp with long, narrow, smooth embolus, slightly widened anteriorly, bent apically, without medial process; terminal apophysis small, spoon-shaped; median apophysis short, narrow (fig. 31); retrolateral tibial apophysis short, spiniform (fig. 32).

**FEMALE:** Total length 7.88. Carapace 3.50 long, 2.44 wide. Femur II 1.88 long. Eye sizes and interdistances: AME 0.14, ALE 0.14, PME 0.11, PLE 0.10; AME-AME 0.07, AME-ALE 0.01, PME-PME 0.05, PME-PLE 0.18, ALE-PLE 0.14; MOQ length 0.32, front width 0.28, back width 0.25. Leg spi-



Figs. 35–38. *Scotognapha canaricola* (Strand). 35. Left male palp, ventral view. 36. Same, retro-lateral view. 37. Epigynum, ventral view. 38. Same, dorsal view.

nation: femur III d1-1-1; patella III p0-1-0; tibiae: III d1-0-2; IV p2-1-1; metatarsi: III d1-0-0, p2-2-2, r2-2-2; IV d1-0-0. Epigynal atrium deep, extremely wide, with long, thick lateral margins, narrowed posteriorly; hood wide, bearing transverse ridges anteriorly (fig. 33); heads of spermathecal ducts wide, thick, similar in size to receptacles (fig. 34).

OTHER MATERIAL EXAMINED: CANARY ISLANDS: **Hierro:** (Cott, MNHN), 1 ♀ (misidentified by Berland as *S. convexa*, vial also contains a female belonging to the *Drasodes lapidosus* group); Las Playas, under stones, Aug. 1985 (J. Wunderlich, AMNH, CJW), 2 ♀. **Lanzarote:** between Femes and Uga, Apr. 1996, under stones (J. Wunderlich, AMNH), 1 ♂; Femes, May, elev. 400 m (J. Wunderlich, CJW), 1 ♂. **Tenerife:** El Medano, Mar. 7, 1996, stony, sandy area by sea, elev. 10 m (J. Murphy, JAM), 1 ♀; Las Galletas, El Fraile, Mar. 11, 1996, stony waste near sea (J. Murphy, JAM), 1 ♀.

DISTRIBUTION: Known from Hierro, Lanzarote, and Tenerife.

### *Scotognapha canaricola* (Strand)

Figures 35–38

*Gnaphosa canaricola* Strand, 1911: 191 (female holotype from Alto Garajonay, Gomera, Canary Islands, in ZMH, examined).

*Scotognapha canaricola*: Schmidt, 1975a: 221.

DIAGNOSIS: Males can easily be recognized by the wide, curved embolus, which is apically bifurcate with an elongate median portion, and the oval, curved spermathecal duct (figs. 35, 36), females by the narrow, anteriorly slightly widened epigynal atrium (fig. 37) and the wide, elongated, oval heads of the spermathecal ducts (fig. 38).

MALE: Total length 7.28. Carapace 3.64 long, 2.60 wide. Femur II 1.95 long. Eye sizes and interdistances: AME 0.12, ALE 0.13, PME 0.11, PLE 0.14; AME-AME 0.04, AME-ALE 0.02, PME-PME 0.04, PME-PLE 0.12, ALE-PLE 0.16; MOQ length 0.44, front width 0.32, back width 0.36. Leg spination: femora: I d1-1-1; II d1-1-1; III d1-1-1, r0-0-1; IV d1-1-1; tibiae: I v2-3-2; II p0-0-1, v1-2-2; III d2-2-1, r1-1-1; IV d1-0-1,



p2-1-1; metatarsus II p0-1-0. Palp with wide, curved embolus, bifurcate apically, with elongate medial portion; spermathecal duct oval, curved; median apophysis short, strongly bent; terminal apophysis irregularly shaped (fig. 35); retrolateral tibial apophysis long, straight, slightly curved at tip (fig. 36).

FEMALE: Described by Strand (1911).

MATERIAL EXAMINED: CANARY ISLANDS: **Gomera:** Alto Garajonay, Mar. 4, 1908 (W. May, ZMH), 1 ♀ (holotype); Ermita de Nuestra Señora del Paso, Mar. 17, 1999 (matured by May 4, 1999), stony hillside, elev. 1000 m (J. Murphy, JAM), 1 ♂; Las Hayas, July, laurel forest, under stones (J. Wunderlich, AMNH), 1 ♂; Valle Gran Rey, July, under stones, elev. 20 m (J. Wunderlich, CJW), 1 ♂.

DISTRIBUTION: Known only from Gomera; the male described by Schmidt (1975b) from Lanzarote belongs to *S. brunnea*.

*Scotognapha paivai* (Blackwall)

Figures 65, 66

*Drassus paivani* Blackwall, 1864: 175 (female syntype from Great Salvage, Salvage Islands, in HDO, examined; patronym for Paiva).

*Drassus bewickii* Blackwall, 1864: 176 (female syntype from Great Salvage, Salvage Islands, in HDO, examined; patronym for Bewicke). NEW SYNONYMY.

*Drassus paivai*: Simon, 1883: 282.

*Drassus bewicki*: Simon, 1883: 282.

*Scotognapha paivai*: Denis, 1963: 40, figs. 7–9.

*Scotognapha bewickei*: Denis, 1963: 41, figs. 10–12.

DIAGNOSIS: Females resemble those of *S. canaricola*, but can be recognized by the extremely narrow, anteriorly rhomboidal epigynal atrium (fig. 65) and the large, long heads of the spermathecal ducts (fig. 66).

MALE: Unknown. The male from Tenerife described by Blackwall (1868: 407) could not be found in HDO, but was presumably misidentified.

FEMALE: Described by Blackwall (1864).

MATERIAL EXAMINED: SALVAGE ISLANDS: **Great Salvage:** (HDO), 2 ♀ (*S. paivai* syntypes), 2 ♀ (*S. bewickei* syntypes); 1983 (J. Murphy, AMNH), 1 ♀.

DISTRIBUTION: Known only from the Salvage Islands (see Denis, 1963, for additional records); the juveniles from Tenerife record-

ed by Schmidt (1975c: 503, 504) are presumably misidentified.

SYNONYMY: No genitalic differences were detected among the female syntypes. Blackwall and Denis separated the two species only by differences in the size of the posterior lateral spinnerets: *S. bewickei* has very long spinnerets that are longer than the anterior laterals, with a long basal segment and a small apical segment, whereas *S. paivai* has a short basal segment on the posterior lateral spinnerets, which are shorter than the anterior laterals. The same character was probably used by Simon (1912) when he inferred that *S. bewickei* belonged to the Agelenidae rather than Gnaphosidae. Our study of the types and additional material indicates that all species of this genus have narrow, very long posterior lateral spinnerets (fig. 11) that are longer than the anterior laterals, but that the posterior laterals are most commonly retracted into the abdomen (at least in preserved specimens) and thus look quite short, even shorter than the anterior laterals.

*Scotognapha haria*, new species

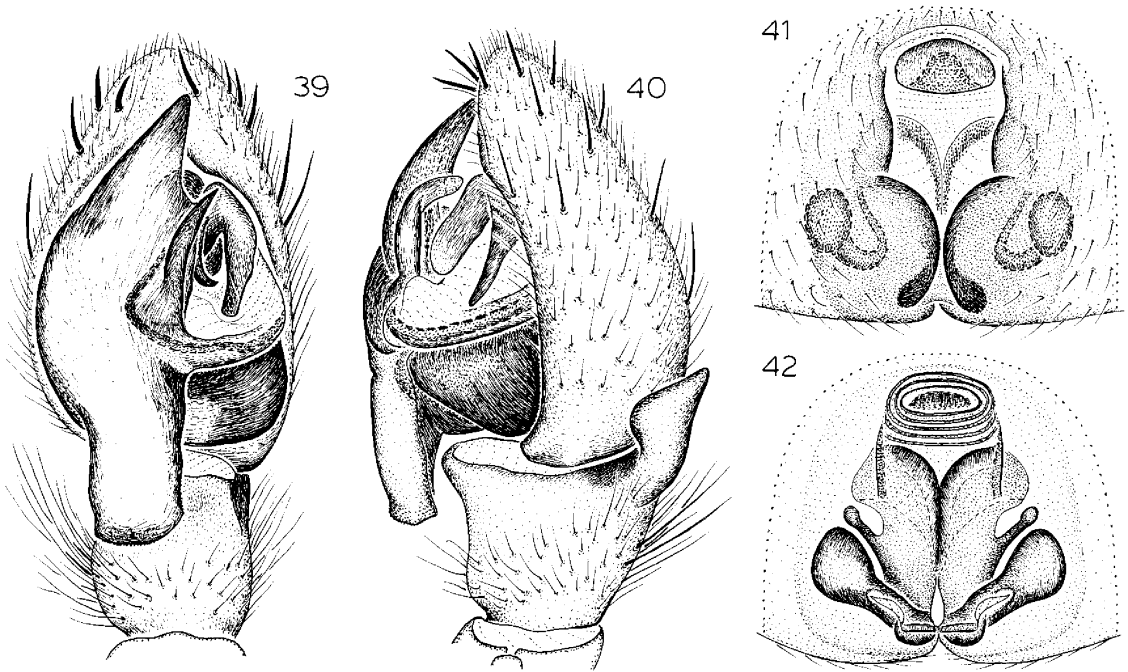
Figures 39–42

TYPES: Male holotype and female allotype from a stony area in a montane forest S of Haria, Lanzarote, Canary Islands (end of Apr.–May; J. Wunderlich), deposited in AMNH (courtesy of Mr. Wunderlich).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males resemble those of *S. canaricola* but can be recognized by the wide, square distal portion of the tegulum, the straight, apically bifurcate embolus with a greatly elongated lateral branch, and the triangular retrolateral tibial apophysis (figs. 39, 40), females by the wide median portion and strongly narrowed posterior portion of the epigynal atrium (fig. 41) and the narrow, widely spaced heads of the spermathecal ducts (fig. 42).

MALE: Total length 8.43. Carapace 4.21 long, 3.07 wide. Femur II 2.57 long. Eye sizes and interdistances: AME 0.11, ALE 0.15, PME 0.14, PLE 0.12; AME-AME 0.08, AME-ALE 0.01, PME-PME 0.03, PME-PLE 0.19, ALE-PLE 0.20; MOQ length 0.35, front width 0.31, back width 0.27. Leg spi-



Figs. 39–42. *Scotognapha haria*, new species. **39.** Left male palp, ventral view. **40.** Same, retrolateral view. **41.** Epigynum, ventral view. **42.** Same, dorsal view.

nation: femora: I left leg d1-1-2, r0-1-1, right leg d1-1-2, r0-0-1; II d1-1-2, p0-1-1, r0-1-0; III d1-1-2; IV d(left)1-1-1, d(right)1-1-2, p0-1-1, r0-1-1; patellae: II p0-1-0; III p1-1-0, r1-1-0; IV p1-0-0, r1-1-0; tibiae: I p1-1-1, v2-2-2, r0-1-0; II p1-1-2, v1-2-2, r0-1-0; III d2-0-2; IV d1-1-1, p2-1-1; metatarsi: I p0-1-1, v2-2-2; II p0-1-2, r1-0-1; III p2-1-1, r2-1-1; IV d2-2-2, r2-1-1. Palp with wide, straight embolus, bifurcate apically, with elongate lateral portion; distal part of tegulum square; median apophysis short, strongly bent; terminal apophysis small, oval (fig. 39); retrolateral tibial apophysis triangular (fig. 40).

FEMALE: Total length 9.46. Carapace 4.15 long, 2.62 wide. Femur II 2.10 long. Eye sizes and interdistances: AME 0.21, ALE 0.17, PME 0.17, PLE 0.15; AME-AME 0.13, AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.23, ALE-PLE 0.17; MOQ length 0.59, front width 0.53, back width 0.49. Leg spination: femora: III d1-1-1; IV d1-1-1; tibiae: III d2-0-2, r1-1-1; IV d1-0-1, p2-1-1. Epigynal atrium deep, wide anteriorly, slightly narrowed medially, strongly narrowed posteriorly, copulatory openings situated medially (fig. 41), heads of spermathecal ducts

narrow, widely spaced; receptacles large, directed anterolaterally (fig. 42).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Lanzarote.

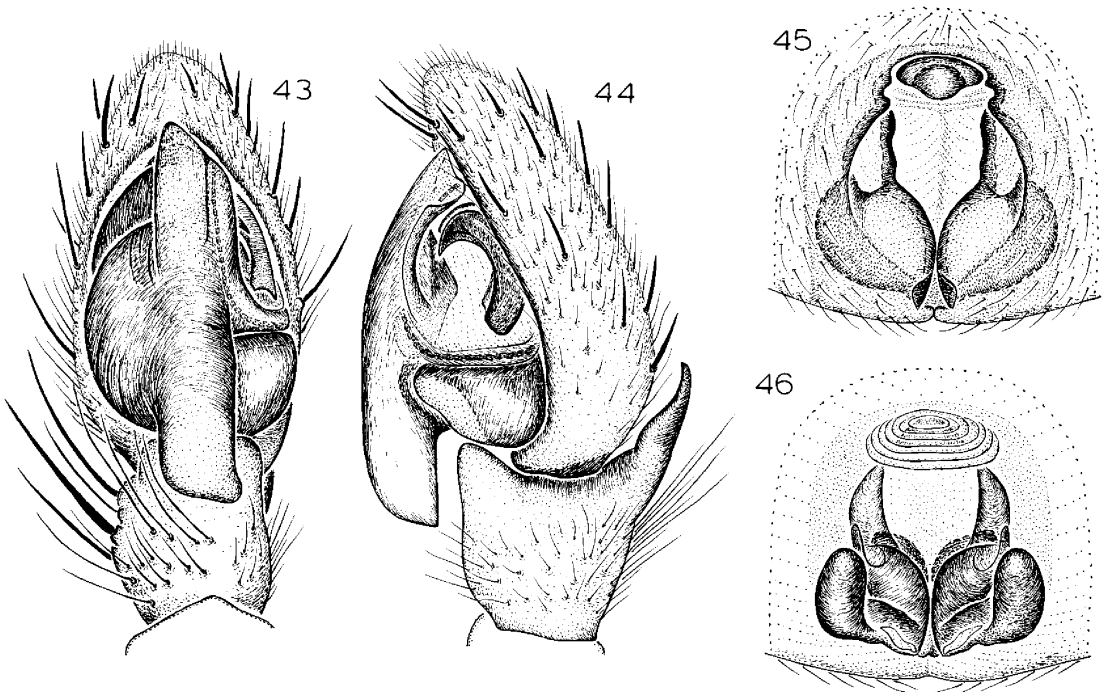
#### *Scotognapha brunnea* Schmidt

Figures 43–46

*Scotognapha canaricola* (misidentified): Schmidt, 1975b: 242, fig. 1 (male from Bateria de Río, Lanzarote).

*Scotognapha brunnea* Schmidt, 1980: 331, fig. 1 (female holotype from Playa Famara, Lanzarote, Canary Islands, in NMS, examined).

DIAGNOSIS: Males and females resemble those of *S. haria* and *S. taganana* but males can be recognized by the long, wide, and straight embolus, the square posterior portion of the tegulum, the wide, long median apophysis, and the narrow, sharply pointed retrolateral tibial apophysis (figs. 43, 44), females by the deep, y-shaped epigynal atrium, the lateral tubercles on the epigynal field (fig. 45), and the slender heads of the spermathecal ducts, which are covered ventrally by the anteriorly directed receptacles (fig. 46).



Figs. 43–46. *Scotognapha brunnea* Schmidt. **43.** Left male palp, ventral view. **44.** Same, retrolateral view. **45.** Epigynum, ventral view. **46.** Same, dorsal view.

MALE: Described by Schmidt (1975b).

FEMALE: Described by Schmidt (1980).

Material Examined: CANARY ISLANDS:

**Lanzarote:** Bateria de Río, Nov. 10, 1972 (G. Schmidt, NMS), 1 ♂; Playa Famara, Sept. 12, 1977 (G. Schmidt, NMS), 1 ♀ (holotype).

DISTRIBUTION: Known only from Lanzarote.

*Scotognapha wunderlichii*, new species

Figures 47–50

**TYPES:** Male holotype taken in pitfall trap at an elevation of 600 m at Barranco de Agaete, Grand Canary, Canary Islands (May–June 1988; J. Wunderlich), and female allotype taken in pitfall trap at an elevation of 400 m at Embalse Parrelillo, Grand Canary, Canary Islands (Aug. 29, 1990; C. G. Campos), deposited in AMNH.

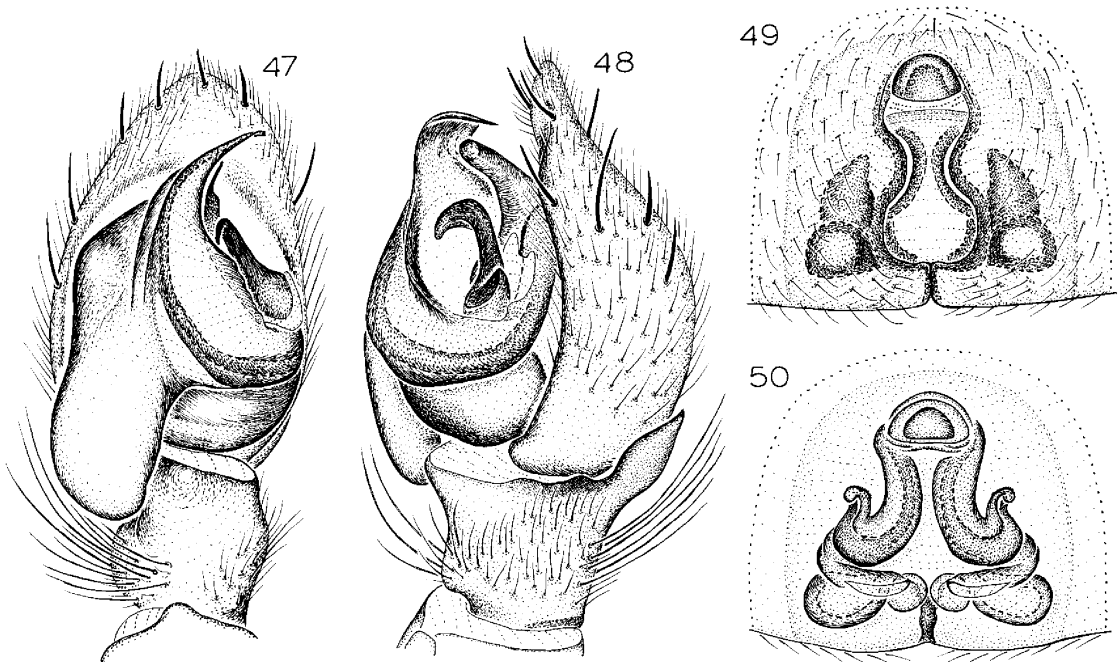
**ETYMOLOGY:** The specific name is a patronym in honor of the collector of the holotype.

**DIAGNOSIS:** Males can easily be recognized by the basally wide embolus, which is strongly narrowed anteriorly, and bent and sharply pointed apically (figs. 47, 48), females by the wide, deep, medially narrowed

epigynal atrium (fig. 49), the large, round heads of the spermathecal ducts, and the laterally directed receptacles (fig. 50).

**MALE:** Total length 5.82. Carapace 2.75 long, 2.10 wide. Femur II 1.83 long. Eye sizes and interdistances: AME 0.10, ALE 0.12, PME 0.12, PLE 0.10; AME-AME 0.04, AME-ALE 0.01, PME-PME 0.04, PME-PLE 0.11, ALE-PLE 0.18; MOQ length 0.31, front width 0.29, back width 0.27. Leg spination: femora: I d1-1-1; II d1-1-1; III d1-1-1; IV d1-1-1, p0-1-1, r0-1-1; patellae: III spineless; IV p1-0-0; tibiae: I p0-1-1, v2-2-2; II p1-1-1, v1-2-2; III d1-0-1; IV d1-0-1, p2-1-2; metatarsi: I p0-1-0, v2-2-2; II p0-1-1. Palp with embolus basally wide, strongly narrowed anteriorly, bent apically, sharply pointed, converging with long, narrow terminal apophysis (fig. 47); median apophysis short, slightly curved; retrolateral tibial apophysis straight, long (fig. 48).

**FEMALE:** Total length 6.90. Carapace 3.60 long, 2.70 wide. Femur II 2.70 long. Eye sizes and interdistances: AME 0.21, ALE 0.17, PME 0.17, PLE 0.15; AME-AME 0.13,



Figs. 47–50. *Scotognapha wunderlichi*, new species. 47. Left male palp, ventral view. 48. Same, retrolateral view. 49. Epigynum, ventral view. 50. Same, dorsal view.

AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.23, ALE-PLE 0.17; MOQ length 0.59, front width 0.53, back width 0.49. Leg spination: femora: III d1-1-1; IV d1-1-1; tibia IV p2-1-1. Epigynal atrium wide, deep, equal in width anteriorly and posteriorly, narrowed medially, with wide hood (fig. 49); spermathecal ducts with large, round heads, receptacles oval, directed laterally (fig. 50).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Grand Canary.

*Scotognapha teideensis* (Wunderlich),  
new combination  
Figures 1–18, 51–56

*Nomisia teideensis* Wunderlich, 1991: 486, figs. 761–764 (male holotype from Las Canadas, Tenerife, Canary Islands, in NMS, examined).

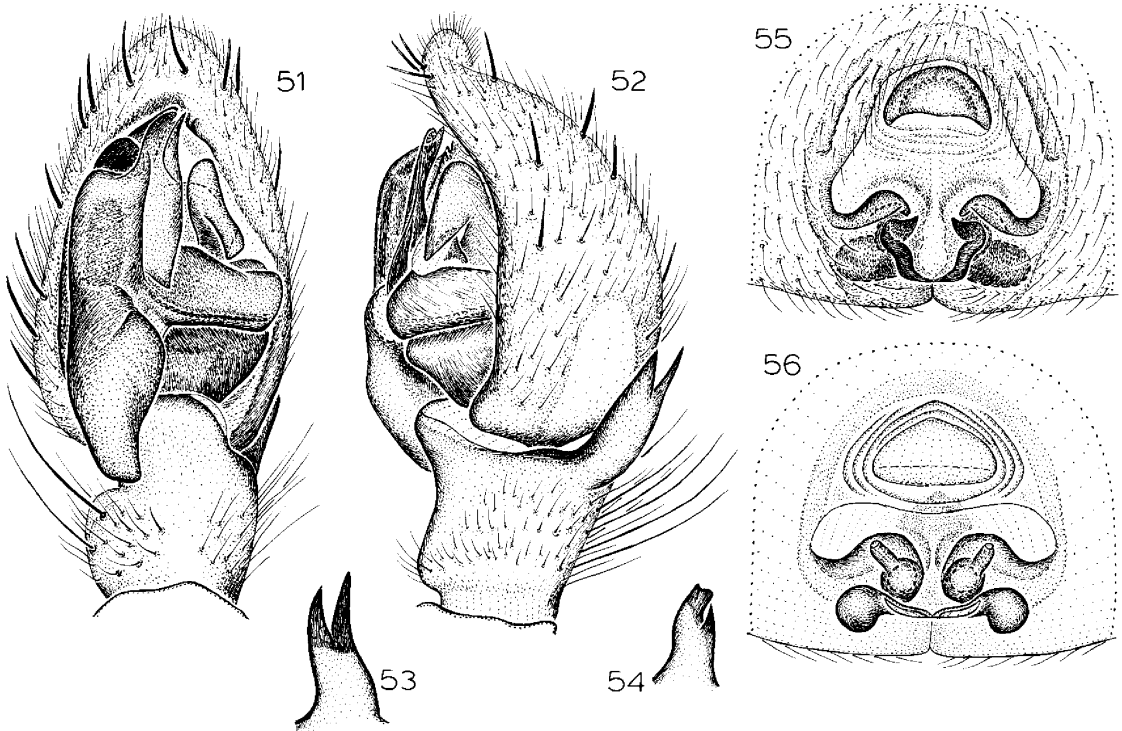
DIAGNOSIS: Males can easily be recognized by the straight, narrow, bifurcate embolus with almost equally sized apical portions, and the bifurcate tip of the retrolateral tibial apophysis (figs. 51–54), females by the extremely wide medial portion of the epigynal

atrium (fig. 55) and the large, elongated, anterolaterally directed heads of the spermathecal ducts (fig. 56).

MALE: Described by Wunderlich (1991).

FEMALE: Total length 14.05. Carapace 7.54 long, 5.85 wide. Femur II 4.46 long. Eye sizes and interdistances: AME 0.17, ALE 0.20, PME 0.15, PLE 0.17; AME-AME 0.19, AME-ALE 0.09, PME-PME 0.12, PME-PLE 0.31, ALE-PLE 0.36; MOQ length 0.52, front width 0.45, back width 0.42. Leg spination: femur III d1-1-3; patellae: III p0-1-0; IV r0-0-0; tibiae: III d1-2-2, r2-1-2; IV d2-1-0, p2-1-1, r1-3-2; metatarsi: I, II spineless; III d2-2-2; IV d2-2-2. Epigynal atrium wide, deep, widened medially, narrowing posteriorly, with wide hood (fig. 55), spermathecal ducts with large, elongate, anterolaterally directed heads, receptacles oval, laterally directed (fig. 56).

MATERIAL EXAMINED: CANARY ISLANDS: **Tenerife:** Las Canadas, road 821, 48 km, Feb.–May, pitfall, elev. 2000 m (M. Knösel, C. G. Campos, J. Wunderlich, NMS), 1 ♂ (holotype), June 11–19, 1984, pit-



Figs. 51–56. *Scotognapha teideensis* (Wunderlich). 51. Left male palp, ventral view. 52. Same, retrolateral view. 53, 54. Same, retrolateral tibial apophysis, variation. 55. Epigynum, ventral view. 56. Same, dorsal view.

falls, elev. 2100–2250 m (C. G. Campos, CPO, AMNH), 3♂, 1♀, Las Canadas, June 3–12, 1995 (N. Zurita, CPO, AMNH), 7♂, July 6–11, 1995 (M. Arechavaleta, CPO, AMNH), 2♂, June 3–29, 1995, Oct. 7, 1995, May 18, 1996 (N. Zurita, CPO, AMNH), 6♂, 1♀, June 11–12, 1995 (A. Camacho, P. Oromí, CPO, AMNH), 2♂; Tabaiba, Apr. 3–May 30, 1985, pitfall (AMNH), 1♂.

DISTRIBUTION: Known only from Tenerife.

***Scotognapha galletas*, new species**

Figures 57–60

**TYPES:** Male holotype and female allotype from Las Galletas, Tenerife, Canary Islands (Apr.; J. Wunderlich), deposited in AMNH (courtesy of Mr. Wunderlich).

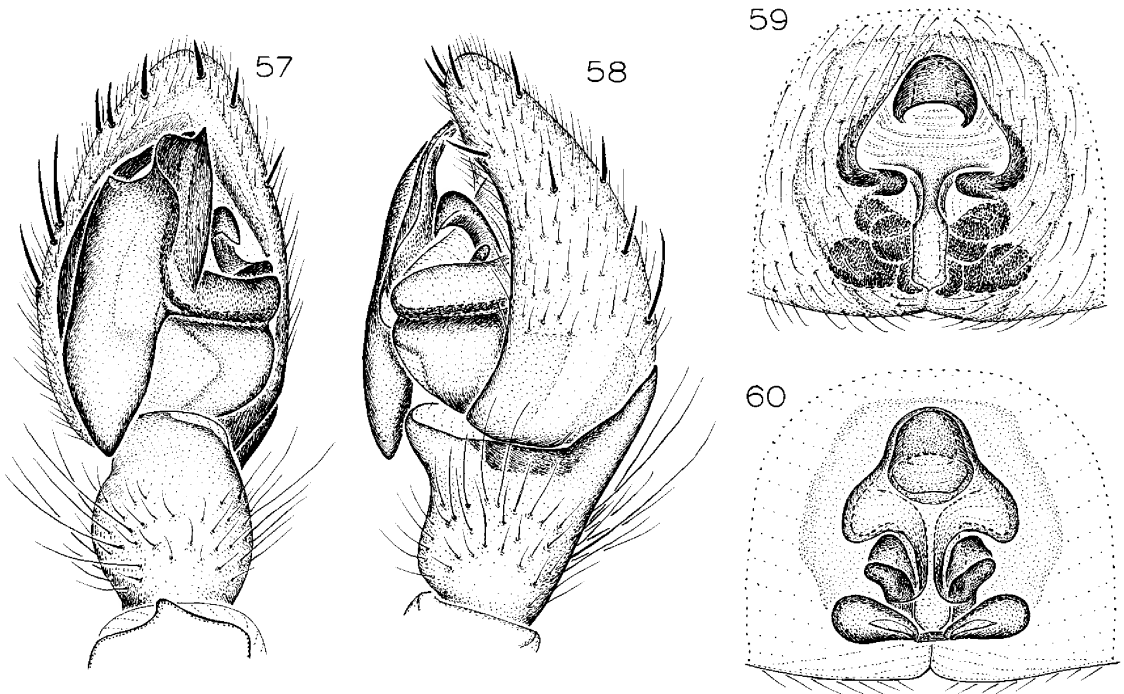
**ETYMOLOGY:** The specific name is a noun in apposition taken from the type locality.

**DIAGNOSIS:** Males resemble those of *S. teideensis* but can be recognized by the wide, bifurcate embolus with a wide, curved pro-

lateral tip and a narrow retrolateral tip (fig. 57) and the thick, distally narrowed retrolateral tibial apophysis (fig. 58), females by the wide epigynal atrium with large lateral tubercles (fig. 59) and the short heads of the anteriorly directed spermathecal ducts (fig. 60).

**MALE:** Total length 7.87. Carapace 3.88 long, 3.00 wide. Femur II 2.44 long. Eye sizes and interdistances: AME 0.16, ALE 0.17, PME 0.15, PLE 0.16; AME-AME 0.10, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.15, ALE-PLE 0.16; MOQ length 0.42, front width 0.37, back width 0.36. Leg spination: femora: I d1-1-1; II d1-1-1; III d1-1-1; IV d1-1-1, r0-1-1; patellae: II r1-0-0; III p1-1-0; IV p1-0-0; tibiae: I p(left)1-1-1, p(right)1-1-2, v2-2-2, r0-1-1; II p1-1-2, v2-2-2, r1-0-1; III d1-0-2, r(right)3-1-1, r(left)3-1-2; IV d1-1-1, p3-1-1; metatarsi: I p0-1-0, v2-2-1; II p1-1-1; III r2-1-1. Palp with wide, straight, bifid embolus, prolateral tip wide,





Figs. 57–60. *Scotognapha galletas*, new species. 57. Left male palp, ventral view. 58. Same, retrolateral view. 59. Epigynum, ventral view. 60. Same, dorsal view.

curved, retrolateral tip narrow, straight, median apophysis long, narrow, terminal apophysis large (fig. 57); retrolateral tibial apophysis thick, narrowed at tip (fig. 58).

**FEMALE:** Total length 8.75. Carapace 3.63 long, 2.86 wide. Femur II 2.60 long. Eye sizes and interdistances: AME 0.21, ALE 0.17, PME 0.17, PLE 0.15; AME-AME 0.13, AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.23, ALE-PLE 0.17; MOQ length 0.59, front width 0.53, back width 0.49. Leg spination: femur III d1-1-1; tibiae: III d2-0-2; IV p2-1-1. Epigynal atrium wide, divided by lateral extensions medially, narrowed posteriorly, with elongated hood (fig. 59); spermathecal ducts with short, wide, anteriorly directed heads, receptacles directed laterally (fig. 60).

**OTHER MATERIAL EXAMINED:** CANARY ISLANDS: **Tenerife:** no specific locality, Mar. 1990 (D. Knösel, AMNH), 1 ♀; El Medano, June 9, 1984, coast (AMNH), 2 ♀; Las Galletas, Apr., under stones (J. Wunderlich, AMNH, CJW), 6 ♂, 3 ♀; S. Andres, Feb. 1979, elev. ca. 200 m (CKT), 1 ♀.

**DISTRIBUTION:** Known only from Tenerife.

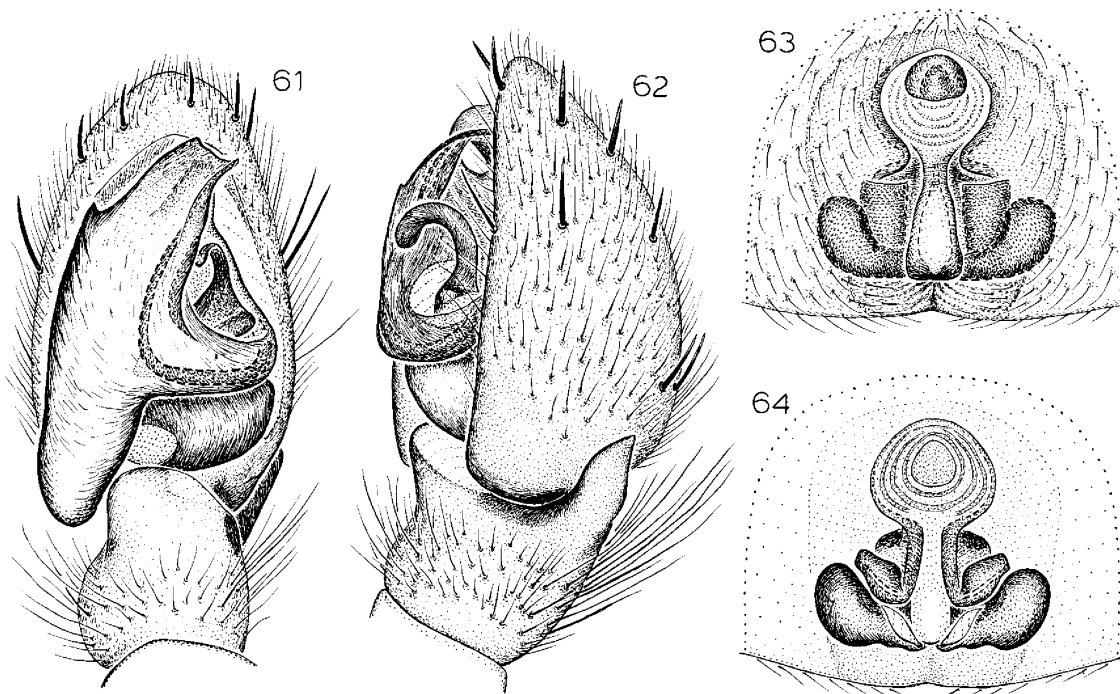
### *Scotognapha taganana*, new species

Figures 61–64

**TYPES:** Male holotype taken under stones at Taganana, Tenerife, Canary Islands (Apr.; J. Wunderlich), and female allotype taken in a meadow at La Esperanza, Tenerife, Canary Islands (Apr.–May; J. Wunderlich), deposited in AMNH (courtesy of Mr. Wunderlich).

**ETYMOLOGY:** The specific name is a noun in apposition taken from the type locality.

**DIAGNOSIS:** Males resemble those of *S. teideensis* and *S. galletas* but can be recognized by the short, wide, apically strongly bent, blunt embolus, the narrow median apophysis, and the thick, blunt, pointed retrolateral tibial apophysis (figs. 61, 62); females can easily be recognized by the epigynal atrium being of subequal width anteriorly and posteriorly but narrowed medially (fig. 63), and by the wide, zigzag conformation of the heads of the laterally directed spermathecal ducts (fig. 64).



Figs. 61–64. *Scotognapha taganana*, new species. **61.** Left male palp, ventral view. **62.** Same, retrolateral view. **63.** Epigynum, ventral view. **64.** Same, dorsal view.

**MALE:** Total length 8.15. Carapace 4.38 long, 3.08 wide. Femur II 2.31 long. Eye sizes and interdistances: AME 0.15, ALE 0.15, PME 0.13, PLE 0.13; AME-AME 0.06, AME-ALE 0.01, PME-PME 0.05, PME-PLE 0.13, ALE-PLE 0.15; MOQ length 0.37, front width 0.31, back width 0.31. Leg spination: femora: I d1-1-1; II d1-1-1; III d1-1-1; IV d1-1-1; patellae: III p0-1-0; IV p0-1-0; tibiae: I p0-0-1, v2-2-2; II p1-0-1, v2-2-2; III d1-1-2, r1-1-1; IV d1-1-2, p2-1-1; metatarsi: I v2-2-1; II p0-1-0. Palp with short, wide, blunt embolus with equal prolateral and retrolateral tips, square posterior part of tegulum, narrow, short median apophysis (fig. 61); retrolateral tibial apophysis straight, thick, bluntly pointed (fig. 62).

**FEMALE:** Total length 8.54. Carapace 4.15 long, 3.08 wide. Femur II 2.70 long. Eye sizes and interdistances: AME 0.12, ALE 0.17, PME 0.13, PLE 0.12; AME-AME 0.07, AME-ALE 0.04, PME-PME 0.05, PME-PLE 0.15, ALE-PLE 0.17; MOQ length 0.33, front width 0.29, back width 0.27. Leg spination: femur III d1-1-1; r0-0-1; tibia III d2-0-2, r1-1-1. Epigynal atrium shallow, of sub-

equal width anteriorly and posteriorly, narrower medially, with oval hood (fig. 63); heads of spermathecal ducts short, wide, forming zigzag, directed laterally, receptacles wide, anteriorly directed (fig. 64).

**OTHER MATERIAL EXAMINED:** CANARY ISLANDS: **Tenerife:** La Esperanza, Apr.–June, meadow (J. Wunderlich, AMNH, CJW), 3♂; Las Galletas, El Fraile, Mar. 11, 1996, stony waste near sea (J. Murphy, JAM), 1♂; Mercedes, Apr.–June, forest (J. Wunderlich, AMNH, CJW), 3♂.

**DISTRIBUTION:** Known only from Tenerife.

***Scotognapha costacalma*, new species**

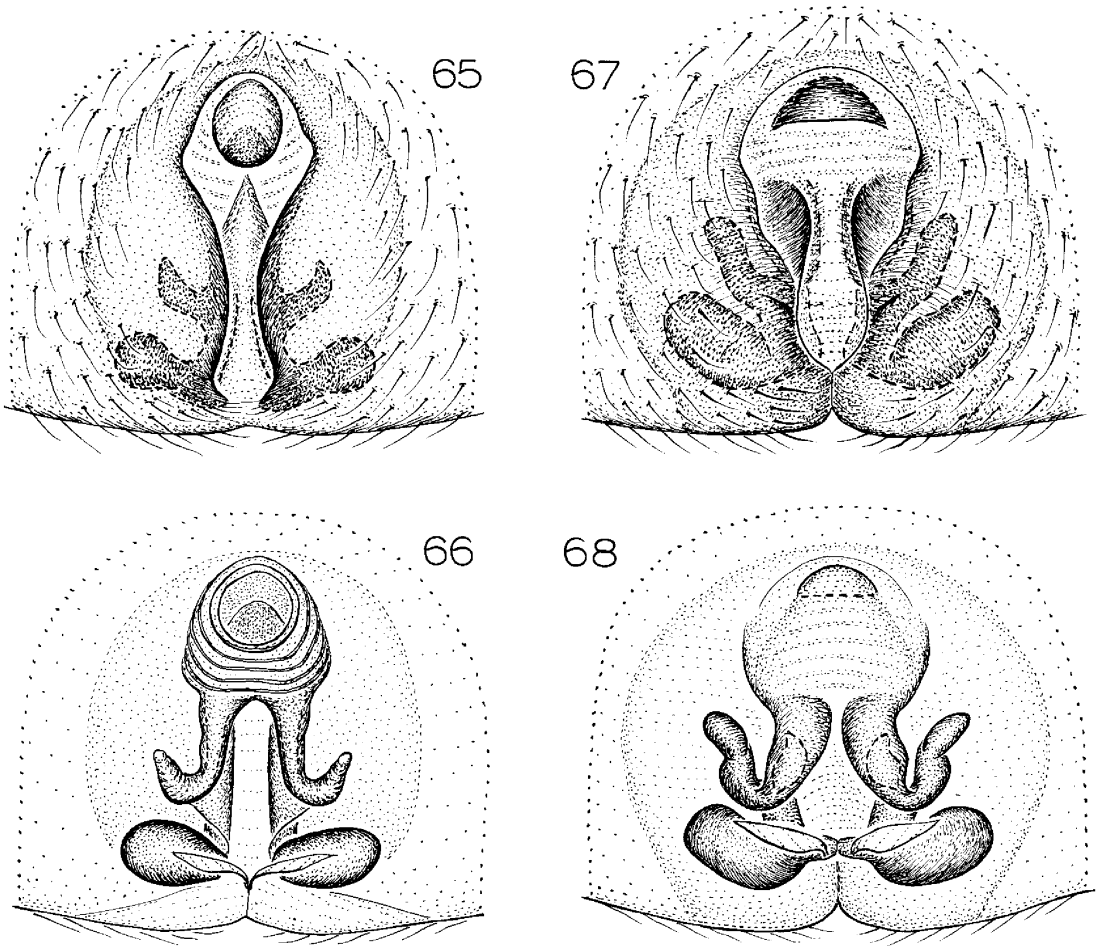
Figures 67, 68

*Scotognapha atomaria* (misidentified): Schmidt, 1976: 324, fig. 6.

**Type:** Female holotype from sand beach at Costa Calma, Fuerteventura, Canary Islands (July 3, 1973; G. Schmidt), deposited in NMS.

**ETYMOLOGY:** The specific name is a noun in apposition taken from the type locality.

**DIAGNOSIS:** Females resemble those of *S.*



Figs. 65–68. 65, 66. *Scotognapha paivai* (Blackwall). 67, 68. *Scotognapha costacalma*, new species. 65, 67. Epigynum, ventral view. 66, 68. Same, dorsal view.

*taganana* but can be recognized by the wide epigynal hood and the wide anterior portion and strongly narrowed posterior portion of the epigynal atrium (fig. 67) and by the long, narrow, anterolaterally directed heads of the spermathecal ducts (fig. 68).

MALE: Unknown.

FEMALE: Total length 5.40. Carapace 2.47 long, 1.89 wide. Femur II 1.12 long. Eye sizes and interdistances: AME 0.11, ALE 0.12, PME 0.08, PLE 0.10; AME-AME 0.08, AME-ALE 0.04, PME-PME 0.04, PME-PLE 0.13, ALE-PLE 0.10; MOQ length 0.28, front width 0.27, back width 0.25. Leg spination: femur III d1-1-1, p0-0-1, r0-0-1; patella III p1-1-0, r1-1-0; tibiae: III d2-0-2, v1-1-2, r1-1-1; IV p2-1-1, v1-2-2; metatarsus IV

d0-2-2. Epigynal atrium deep, wide anteriorly, shallow, strongly narrowed posteriorly, with wide hood (fig. 67), long, narrow, anterolaterally directed heads of spermathecal ducts in zigzag conformation, oval spermathecal receptacles directed laterally (fig. 68).

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Known only from Fuerteventura.

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